भारतीय मानक
Indian Standard

IS 1745 : 2018

पेट्रोलियम हाइड्रोकार्बन सॉल्वेंट — विशिष्टि

(तीसरा पुनरीक्षण)

Petroleum Hydrocarbon Solvents — Specification

(Third Revision)

ICS 75.100; 71.080

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भारतीय मानक ब्यूरो
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September 2018 **Price Group 3**

Petroleum and Their Related Products of Synthesis or Biological Origin Sectional Committee, PCD 03

FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Petroleum and Their Related Products of Synthesis or Biological Origin Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

This standard was first issued in 1961 when a large variety of grades of petroleum hydrocarbon solvents was rationalized to a limited set of ranges covering the various uses and in supersession of IS 84 : 1950 'Specification for white spirit for paints'. In the light of experience and in order to provide for an additional grade (Solvent 125/240) widely prevalent in the country, this standard was revised in 1966. Another important change in that revision was to define the solvents 60/80, 50/120 and 90/135 in terms of the dry point as the upper limit instead of the final boiling point as in the case of the other grades. This was because of the poor reproducibility of the final boiling point for these lower fractions and the consequent unreliability of this test requirement in specifying these grades precisely.

The second revision was taken up during 1978. In that revision all grades given in 1966 were retained, however the end use of different grades mentioned in the standard, were deleted to avoid confusion to the consumer.

This revision was taken up as a result of review of this standard by the Committee in the light of the present day requirements and availability of these solvents for various end uses. All the existing grades given in the 1978 version are being retained. The list of test methods referred under Table 1 is included as an additional clause. Few additional test methods are included as *alternate* methods considering the latest technologies available for testing.

The following *alternate* test methods are also available for the characteristics stated and in case of dispute the corresponding part of IS 1448 (except for Sulphur), as given in Table 1 of this standard shall be the referee test method.

Characteristics	*Alternate Methods of Test*
Total Sulphur	ASTM D 4294, ASTM D 2622, ASTM D 3120, ASTM D 5453
Flash Point	IP 170
Density	ASTM D 4052, ASTM D 1298
Aromatic Content	ASTM D 1319
Distillation	ASTM D 86

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

PETROLEUM HYDROCARBON SOLVENTS — SPECIFICATION

(Third Revision)

1 SCOPE

This standard prescribes the requirements and the methods of test for petroleum hydrocarbon solvents generally used in solvent extraction of oils, rubber and paint industries, in the formulation of insecticides, for dry cleaning and for textile printing purposes.

2 REFERENCES

The following standards contain provisions which through reference in this text, constitute provisions of the standard. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

IS/ISO No.	*Title*
1260 (Part 1) : 1973	Pictorial markings for handlings and labelling of goods : Part 1 Dangerous goods (*frist revision*)
1447 (Part 1) : 2016	Petroleum and its products — Methods of Sampling: Part 1 Manual Sampling (*first revision*)
IS 1448	Methods of test for petroleum and its products:
[P : 12] : 2013/ ISO 2049 : 1996	Determination of colour (ASTM scale)
[P : 14] : 1960	Colour by Saybolt chromometer
[P : 15] : 2004	Corrosiveness to copper — Copper strip corrosion
[P : 16] : 2014/ ISO 3675 : 1998	Density, relative density or API gravity of crude petroleum and liquid petroleum products by hydrometer method
[P : 18] : 1991	Distillation of petroleum products
[P : 20] : 1998	Determination of flash point by Abel apparatus
[P : 23] : 2004/ ISO 3837 : 1993	Determination of hydrocarbon types — Fluorescent indicator adsorption method
[P : 29] : 2004/ ISO 6246 : 2017	Gum content of light and middle distillate fuels — Jet evaporation method
[P : 34] : 1979	Determination of sulphur in petroleum products (lamp method)
ISO 8754 : 2003	Petroleum products — Determination of sulfur content — Energy-dispersive X-ray fluorescence spectrometry
ISO 12185 : 1996	Crude petroleum and petroleum products — Determination of density — Oscillating U-tube method
ISO 20846 : 2011	Petroleum products — Determination of sulfur content of automotive fuels — Ultraviolet fluorescence method

2 GRADES

The hydrocarbon solvents shall be of the following grades, generally applicable for the various industries, such as solvent extraction, rubber industry, paint industry, textile industry, dry-cleaning and insecticide formulation, etc:

a) Solvent 60/80;
b) Solvent 50/120;
c) Solvent 90/135;
d) Solvent 125/240;
e) Solvent 145/205, low aromatic;
f) Solvent 145/205, high aromatic; and
g) Solvent 150/300.

3 REQUIREMENTS

3.1 General

The material shall be a petroleum distillate and shall be clear and free from sediment, suspended matter and undissolved water.

3.1.1 The material shall also comply with the requirements given in Table 1 when tested according to the appropriate method prescribed under 'P' series of IS 1448, as indicated in col 10 of Table 1.

4 PACKING AND MARKING

4.1 Packing

The material shall be packed in suitable containers as agreed to between the purchaser and the supplier and subject to the provisions of latest issue of Red Tariff Rules and Rates for the Conveyance by Rail of Explosives and Other Dangerous Goods, issued by the Indian Railway Conference Association and the latest Petroleum Rules enforced in the country.

4.2 Marking

4.2.1 The material shall be supplied in accordance with the marking and delivery instructions given by the purchaser.

4.2.2 Each container shall be marked with the following information:

a) Name and grade of the material;
b) Manufacturer's name, initials or trade-mark, if any;
c) Volume of the contents in litres;
d) Year of manufacture or packing; and
e) The caution label 'FLAMMABLE' together with the corres-ponding symbol for labelling dangerous goods [*see* Fig. 18 of IS 1260 (Part 1)].

4.2.3 Each container may also be marked with the Standard Mark.

4.2.4 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations made thereunder. The details of conditions under which the license for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

5 SAMPLING

5.1 Representative samples of the material shall be drawn as prescribed in IS 1447.

5.2 Tests for all the characteristics given in Table 1 shall be conducted on the composite sample.

5.3 The lot shall be declared as conforming to the requirements of the standard, if all the test results on the composite sample meet the relevant specification requirement.

Table 1 Requirements for Petroleum Hydrocarbon Solvents
(*Clauses* 3.1.1 *and* 5.2)

Sl No.	Characteristic	Solvent 60/80	Solvent 50/120	Solvent 90/135	Solvent 125/240	Solvent 145/205 Low Aromatic	Solvent 145/205 High Aromatic	Solvent 150/300	Method of Test [Ref to P : of IS 1448]
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
i)	Colour (Saybolt), *Min*	+25	+25	+25	+21	+20	+20	—	P : 14
ii)	Colour (ASTM), *Max*	—	—	—	—	—	—	3.5	P : 12
iii)	Density at 15°C, g/ml	← Not limited but to be reported →							P : 16/ ISO 12185
iv)	Flash point (Abel), *Min*	—	—	—	30°C	35°C	35°C	35°C	P : 20
v)	Distillation range								P : 18
	a) Initial boiling point, *Min*	60°C	50°C	90°C	125°C	145°C	145°C	150°C	
	b) 50 percent by volume recovered at, in °C	← Not limited but to be reported →							
	c) 95 percent by volume recovered at, in °C	← Not limited but to be reported →							
	d) Final boiling point, *Max*		—	—	240°C	205°C	205°C	300°C	
	e) Dry point, *Max*	80°C	120°C	135°C	—	—	—	—	
vi)	Aromatic content, percent by volume	6 *Max*	35 *Max*	20 *Min*	40 *Max*	40 *Max*	45 *Min*	50 *Min*	P : 23
vii)	Sulphur, total, percent by mass, *Max*	0.05	—	—	—	—	—	—	P : 34* / ISO 8754/ ISO 20846
viii)	Copper strip corrosion for 3 h at 50°C	← Not worse than No. 1 →							P : 15
ix)	Residue on evaporation, mg/100 ml, *Max.*	5	5	5	5	5	5	—	P : 29 (AirJet)

* In case of dispute, Method P 34 shall be used a referee metbod.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Petroleum and Their Related Products of Synthesis or Biological Origin Sectional Committee, PCD 03

Organization	*Representative(s)*
Indian Institute of Technology, Delhi	Prof L. M. Das (***Chairman***)
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Scientist 'D', BIS

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University of Mumbai, Department of Chemical Technology, Mumbai	Prof Vinod R. Kametkar

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